

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

To:

ASTRAZENECA

Global Intellectual Property
151 85 Södertälje
Sverige

CODE	DATE	NTD
ANKOM 26 MAY 2005		GIPS
DATA		Date of mailing (day/month/year)
ENTERED		24 -05- 2005
FINAL CHECK		FOR FURTHER ACTION

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Applicant's or agent's file reference
101377-1 WO

See paragraph 2 below

International application No.
PCT/SE 2005/000156

International filing date (day/month/year)
07.02.2005

Priority date (day/month/year)
10.02.2004

International Patent Classification (IPC) or both national classification and IPC
C07D215/54, 401/12, 413/12, 417/12, A61K31/47, A61P37/00, 11/06

Applicant

AstraZeneca AB et al

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☒ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further opinions, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/SE 2005/000156

Box No. I	Basis of this opinion
1.	<p>With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.</p> <p><input type="checkbox"/> This opinion has been established on the basis of a translation from the original language into the following language, _____, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).</p>
2.	<p>With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:</p> <p>a. type of material</p> <p><input type="checkbox"/> a sequence listing</p> <p><input type="checkbox"/> table(s) related to the sequence listing</p> <p>b. format of material</p> <p><input type="checkbox"/> in written format</p> <p><input type="checkbox"/> in computer readable form</p> <p>c. time of filing/furnishing</p> <p><input type="checkbox"/> contained in the international application as filed.</p> <p><input type="checkbox"/> filed together with the international application in computer readable form.</p> <p><input type="checkbox"/> furnished subsequently to this Authority for the purposes of search.</p>
3.	<p><input type="checkbox"/> In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.</p>
4.	<p>Additional comments:</p>

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/SE 2005/000156

Box No. II Priority

1. ☐ The following document has not yet been furnished:

- ☐ copy of the earlier application whose priority has been claimed (Rules 43*bis*.1 and 66.7(a)).
☐ translation of the earlier application whose priority has been claimed (Rules 43*bis*.1 and 66.7(b)).

Consequently it has not been possible to consider the validity of the priority claim. This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.

2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43*bis*.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.

3. Additional observations, if necessary:

The priority is considered valid.

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/SE 2005/000156

Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

The question whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application

☒ claims Nos. 21-22

because:

☒ the said international application, or the said claims Nos. 21-22
relate to the following subject matter which does not require an international preliminary examination (*specify*):

See PCT Rule 67.1.(iv).: Methods for treatment of the human or animal body by surgery or therapy, as well as diagnostic methods.

☒ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. 1-3
are so unclear that no meaningful opinion could be formed (*specify*):

Present claims 1-3 relate to an extremely large number of possible compounds. In fact, the claim contains so many possible permutations and provisos that a lack of clarity and conciseness within the meaning of Article 6 PCT arise to such an extent as to render a meaningful examination of the claims impossible.

.../

☒ The claims, or said claims Nos. 1-3 are so inadequately supported
by the description that no meaningful opinion could be formed.

☐ no international search report has been established for said claims Nos. _____

☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:

the written form

☐

has not been furnished

☐

does not comply with the standard

the computer readable form

☐

has not been furnished

☐

does not comply with the standard

☐ the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with the technical requirements provided for in the Annex C-bis of the Administrative Instructions.

☐ See Supplemental Box for further details.

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/SE 2005/000156

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of: BOX III

Consequently, the search has been carried out for those parts of the application which appear to be clear and concise, namely those compounds recited in the examples 1-274

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/SE 2005/000156

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	<u>14, 23 and part of 15-20</u>	YES
	Claims	<u>4-13 and part of 15-20</u>	NO
Inventive step (IS)	Claims		YES
	Claims	<u>4-20 and 23</u>	NO
Industrial applicability (IA)	Claims	<u>4-20 and 23</u>	YES
	Claims	<u>21-22</u>	NO

2. Citations and explanations:

Reference is made to the following documents:

D1: EP 0 480 052 A1

D2: WO 02/092571 A1

D3: EP 0 259 174 A1

D4: EP 0 346 208 A1

The claimed invention relates to the need of quinoline-carboxamides as JAK3 kinase modulators according to the description and claims for the treatment of asthma, cancer etc. The claimed invention solves the problem by the use of novel quinoline-carboxamide derivatives of formula I.

Novelty (N)

Document D1 refers to quinoline derivatives as antiulcer drug (See formula I, when $R_a=H$, $R_x=R_4$, $X=CO$ and $NH_2=NR_2R_3$).

Document D2 comprises quinoline-carboxamides as JAK3 kinase modulators (See formula I, when $X=CO$ and $NR_aR_x=X(CR_2)nAr$).

Document D3 presents derivatives of 4-aminoquinolines for the inhibition of gastric acid secretion (See formula I, when $X=CO$, $R_1=NH_2$, $R_a=H$ and $R_x=R_2$).

Document D4 relates to amino-4-quinolines as pharmaceutical compounds (See formula I, when $R_a=R_4$, $R_x=CHR_3(CH_2)_n$, $X=CO$ and $Z=NR_8R_9$).

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WRITTEN OPINION OF THE
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International application No.
PCT/SE 2005/000156

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.
Continuation of: BOX V

The compounds according to claims 4-13 and part of 15-20, are considered to be within the scope of protection of documents D1-D4. Thus, the invention defined in claims 4-13 and part of 15-20 is not new and consequently lacks novelty.

Inventive step

The subject-matter of claims 14, 23 and part of 15-20 consists in the selection of quinolines from the range of the general formulas described in documents D1-D4. Such a selection can only be regarded as inventive, if the quinoline of the claimed invention presents unexpected effects or properties in relation to the rest of the range. However, no such effects or properties are indicated in the application. Hence, no inventive step is present in the subject-matter of claims 4-20 and 23.